AIR QUALITY STUDY

MID COUNTY PARKWAY

$PM_{2.5}$ AND PM_{10} ANALYSIS

08-RIV-MCP PM 0.0/16.3

08-RIV-215 PM 28.0/34.3

EA No. 08-0F3200

Submitted to:

State of California
Department of Transportation, District 8
464 West 4th Street
San Bernardino, California 92401-1400

May 2011

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INTRODUCTION

LSA Associates, Inc. (LSA) prepared this Air Quality Technical Addendum for the Mid County Parkway (MCP) project in response to the United States Environmental Protection Agency (EPA) releasing new $PM_{2.5}$[1] and PM_{10}[2] hot-spot analysis requirements in its March 10, 2006, final transportation conformity rule (71 FR 12468) (Final Rule). The 2006 Final Rule supersedes the Federal Highway Administration's (FHWA) September 12, 2001, "Guidance for Qualitative Project-Level Hotspot Analysis in PM_{10} Nonattainment and Maintenance Areas." This technical addendum was conducted following the procedures and methodology provided in the "Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" (EPA/FHWA Guidance) (EPA, 2006a) developed by the EPA and the FHWA.

This $PM_{2.5}$ and PM_{10} analysis addresses the construction of the MCP project, including the following components identified in the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP): Project ID: RIV031218, CETAP – Mid County Parkway Corridor: complete environmental work/route alternatives (Phases 1 and 2) from State Route 79 (SR-79) in the east through Lake Mathews and Mead Valley to Interstate 15 (I-15).

PROJECT LOCATION AND DESCRIPTION

The Riverside County Transportation Commission (RCTC), in cooperation with the California Department of Transportation (Caltrans) District 8, the County of Riverside, the City of San Jacinto, and the City of Perris, propose to construct the MCP project, a new highway project in Riverside County, California. The project area is located in western Riverside County, primarily along or parallel to the existing Ramona Expressway. Figure 1 depicts the MCP project study area and the regional location of the project. The MCP project study area is approximately 16 mi long and ranges from 1 to 5 mi wide.

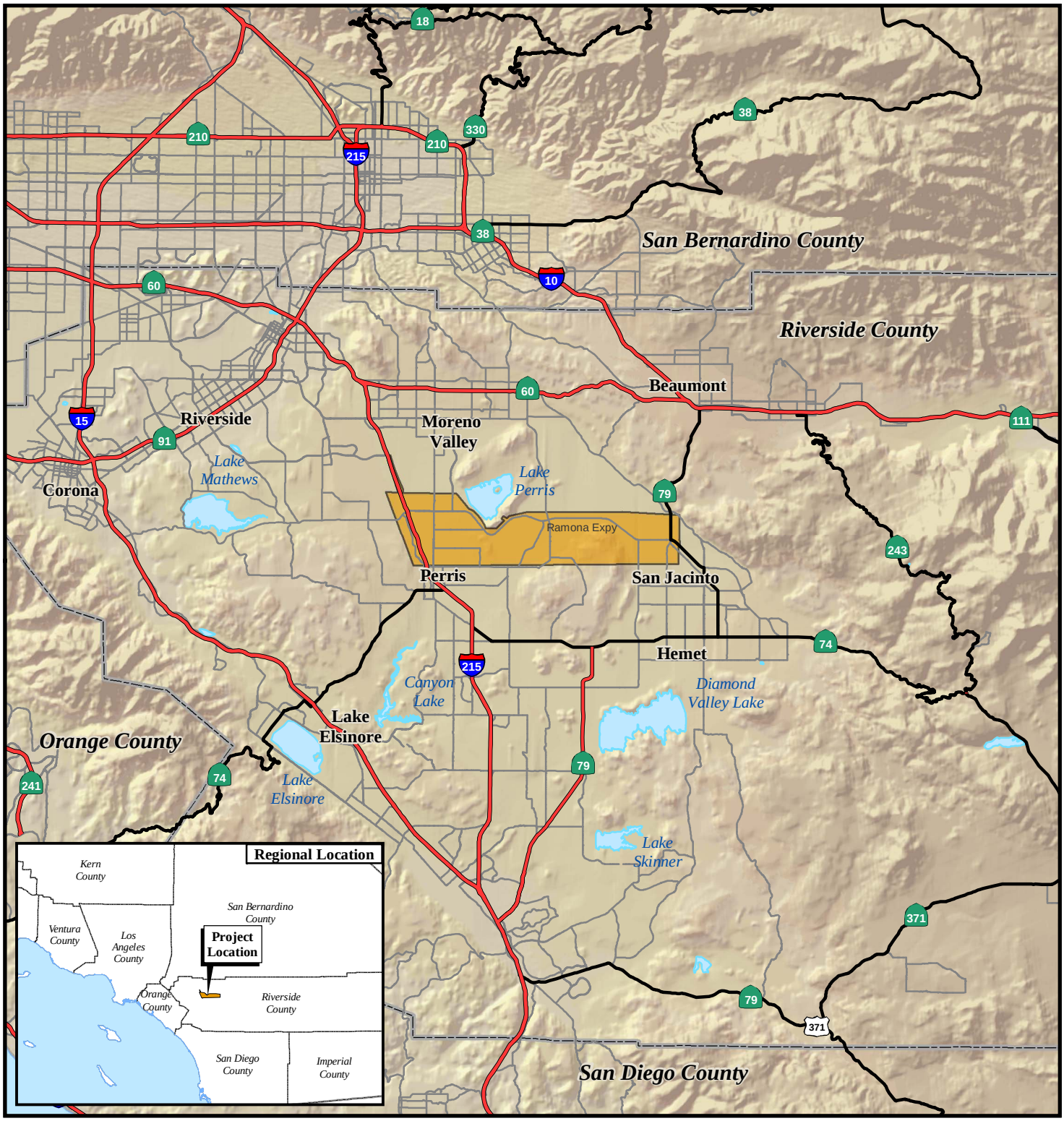
The MCP project will serve as a major west-east connection within western Riverside County. The proposed action would adopt an MCP project alignment and construct a major, limited-access transportation freeway to meet current and projected 2040 travel demand from I-215 on the west to SR-79 on the east.

PURPOSE AND NEED

The purpose of the proposed action is to provide a transportation facility that would effectively and efficiently accommodate regional west-east movement of people, goods, and services between and through Perris and San Jacinto. More specifically, the selected Alternative would:

- Provide increased capacity to support the forecast travel demand for the 2040 design year;
- Provide a limited access facility;
- Provide roadway geometrics to meet state highway design standards;

[1] Particulate matter less than 2.5 microns in diameter.
[2] Particulate matter less than 10 microns in diameter.



LEGEND

FIGURE 1

Mid County Parkway Study Area

SOURCE: ESRI (2008); TBM (2010), Jacobs Engineering (02/2011)

0 3.75 7.5 Miles

Project Vicinity and Study Area

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34.3
EA 08-0F3200 (PN 0800000125)

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- Accommodate Surface Transportation Assistance Act National Network trucks[1]; and
- Provide a facility that is compatible with a future multimodal transportation system.

The MCP project is located in an area of western Riverside County that is undergoing substantial population and employment growth. According to the California Finance Department, in 2009, the population in Riverside County reached approximately 2.1 million people. Specifically, the population in western Riverside County is expected to increase by over 1.3 million people between 2010 and 2035, an increase of more than 60 percent. Growth in employment is expected to occur at an even higher rate, approximately 80 percent between 2010 and 2035.[2] The Inland Empire Quarterly Economic Report states employment in the Inland Empire is no longer decreasing, and employment is projected to increase by 10,500 jobs in 2010 (approximately 0.9 percent). In addition, the report states the housing market in the Inland Empire appears to have bottomed out and is now in the recovery period due to demand and overwhelming supply coming from foreclosures.[3] Although currently funded transportation improvements will address some of the projected future demand, additional transportation improvements are needed to provide for the efficient movement of people and goods in the future

PROJECT ALTERNATIVES

The following are descriptions of the project alternatives for the MCP facility between I-215 in the west and SR-79 in the east, including two No Project/No Action Alternatives (Alternatives 1A and 1B) and the three Build Alternatives (Alternatives 4, 5, and 9 Modified). The alignments of the MCP Build Alternatives are shown on detailed figures in this section. Figure 2 depicts the alignments of the proposed project alternatives.

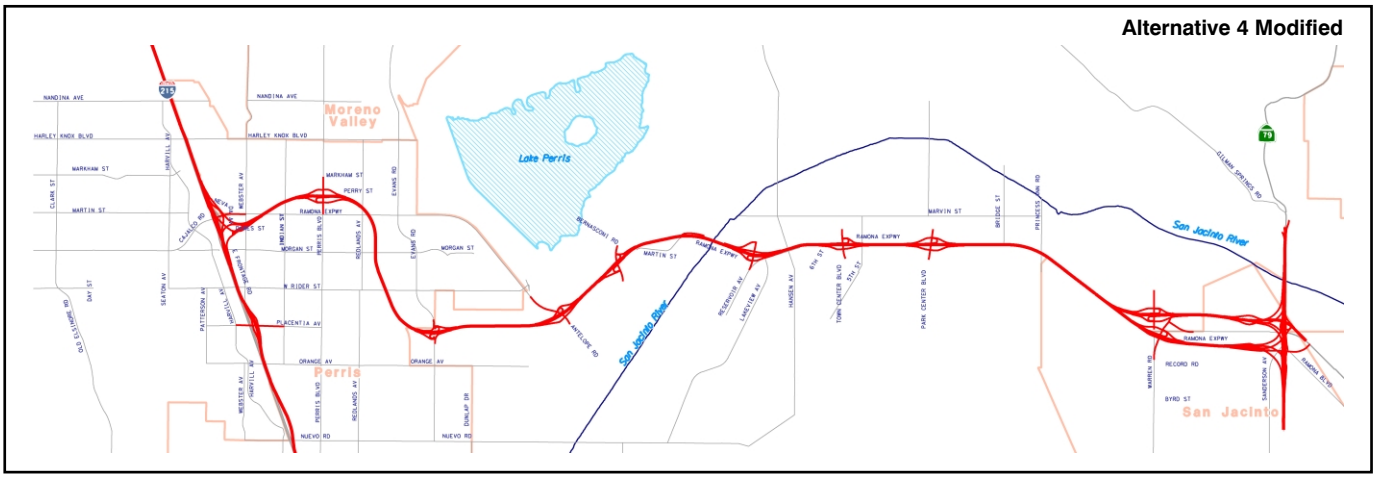
Alternative 1A: No Project/No Action—Existing Ground Conditions. Alternative 1A represents 2040 traffic on the planned street network except for future improvements to Ramona Expressway, which would remain as it exists today. Construction of an MCP project would not be implemented with the No Project/No Action Alternative 1A. The future west-east traffic described in the study area would be served by the existing Ramona Expressway between I-215 and SR-79. This alternative assumes 2040 land use conditions and implementation of planned improvements to the regional and local circulation system, as accounted for in the adopted Riverside County General Plan (2003), RCTC's Measure A program, and other adopted plans and policies.

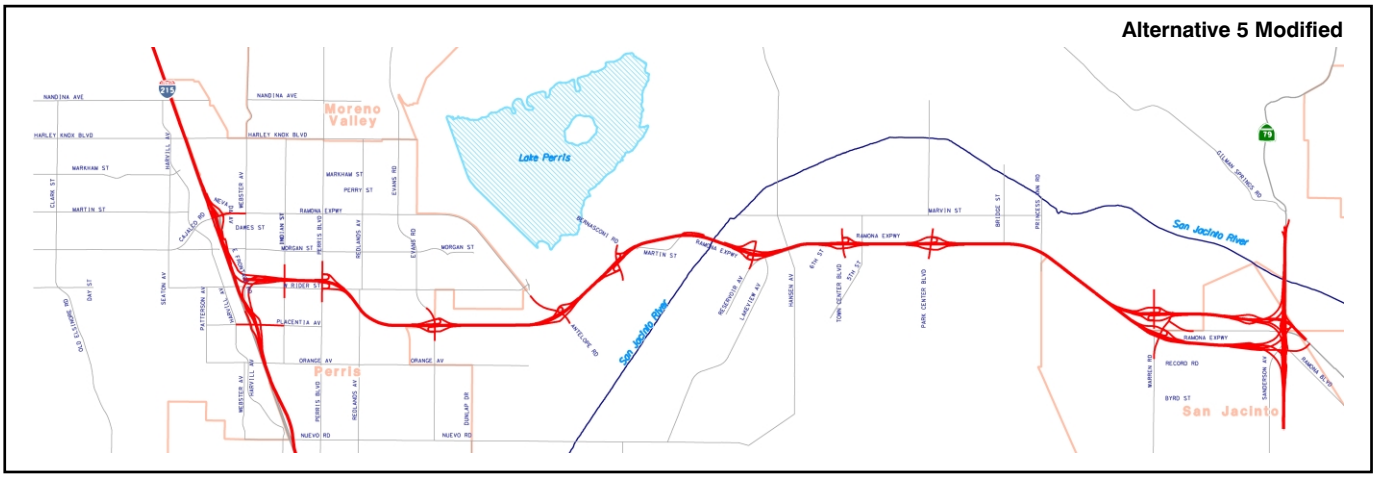
Alternative 1B: No Project/No Action—General Plan Circulation Element Conditions. Alternative 1B represents 2040 traffic levels on the planned street network, according to the

[1] These are larger trucks that are permitted on the federal Interstate system and the non-Interstate Federal-aid Primary System.

[2] 2008 Regional Transportation Plan Integrated Growth Forecast, Southern California Association of Governments.

[3] San Bernardino Associated Governments (SANBAG; October 2009 and January 2010). Inland Empire Quarterly Economic Report.





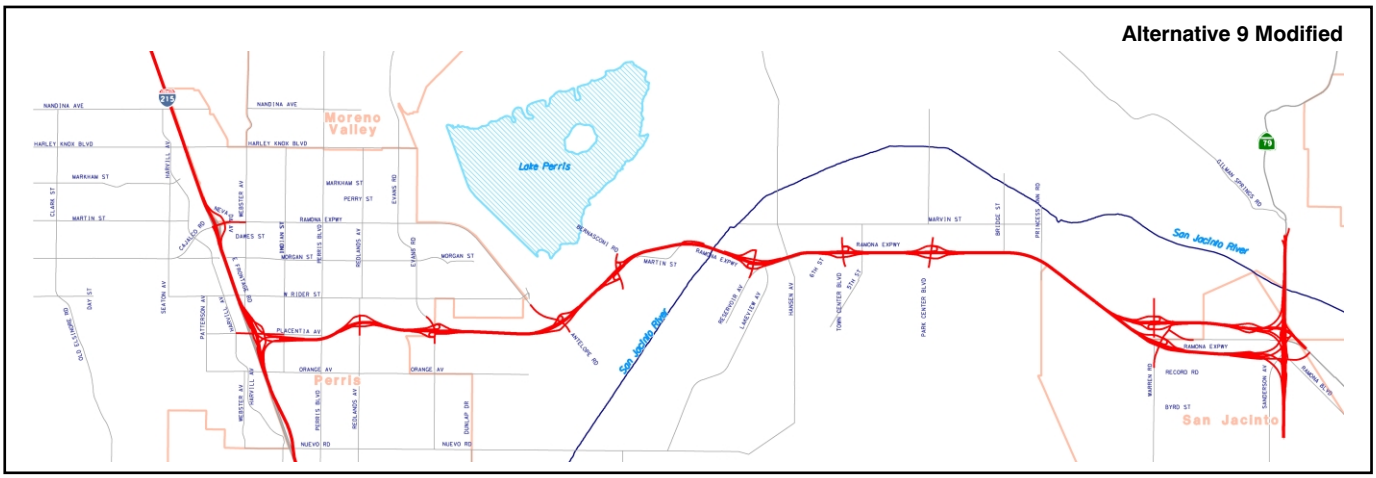


FIGURE 2

SOURCE: TBM (2006), Jacobs Engineering (11/2010)

0 0.75 1.5 MILES

MCP Build Alternatives Modified

08-RIV-MCP PM 0.0/16.3; 08-RIV-215 PM 28.0/34/3
EA 08-0F3200 (PN 0800000125)

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Circulation Element of the Riverside County General Plan. Construction of an MCP project would not be implemented with No Project/No Action Alternative 1B. This alternative is the same as Alternative 1A but includes implementation of Ramona Expressway consistent with the Riverside County General Plan Circulation Element.

Alternative 4 Modified: North Perris (Drain). Alternative 4 Modified proposes a six-lane controlled access freeway. Alternative 4 Modified follows a northern alignment through the City of Perris, adjacent to the Perris Drain (as shown in Figure 1.2).

System interchanges (a freeway-to-freeway type interchange) are proposed for all Build Alternatives at I-215 and SR-79. Descriptions of these system-system interchanges are as follows:

- The MCP/I-215 interchange is proposed as a three-level interchange that will not preclude possible future connections to the west. At the highest point, the MCP/I-215 interchange would be approximately 75 to 100 ft above ground level.
- The MCP/SR-79 interchange is proposed as a three-level interchange at an approximate height of 75 ft. The MCP connection to SR-79 will be made at the proposed realignment of SR-79, south of Ramona Expressway[1]. The MCP provides direct connectors to northbound and southbound SR-79, as well as a six-lane easterly extension that terminates at a proposed signalized intersection at Ramona Expressway. The SR-79 Realignment Project is currently undergoing separate environmental review and is assumed to be constructed prior to the MCP project.

Service interchanges (interchanges that connect a freeway to local arterials) for Alternative 4 Modified are proposed at Perris Boulevard, Evans Road, Ramona Expressway/Antelope Road, Bernasconi Road, Reservoir Road, Town Center Boulevard (proposed new arterial associated with future proposed development), Park Center Boulevard (proposed new arterial associated with future proposed development), and Warren Road.

All of the modified Build Alternatives, including Alternative 4 Modified, include improvements to I-215. These improvements are as follows: (1) the addition of one auxiliary lane between the MCP/I-215 systems interchange and the adjacent service interchange to the north and south to facilitate movement between the MCP and I-215; (2) the addition of an operational/mixed flow lane from MCP to the Van Buren Boulevard Interchange to accommodate additional traffic on I-215 as a result of the MCP; (3) the addition of an operational/mixed-flow lane from Nuevo Road to Cajalco-Ramona Expressway or Harley Knox Boulevard to facilitate weaving on I-215; (4) the addition of a new interchange at Placentia Avenue; and (5) modification of the existing interchange at Cajalco Road/Ramona Expressway.

Alternative 5 Modified: South Perris (at Rider Street). Similar to Alternative 4 Modified, Alternative 5 Modified is a six-lane controlled-access freeway. However Alternative 5 Modified follows a southern alignment through Perris along Rider Street (as shown in Figure 1.2).

[1] SR-79 is proposed to be realigned as a four-lane limited access expressway on a new alignment from south of Domenigoni Parkway to north of Gilman Springs Road and is currently undergoing separate environmental review.

System interchanges proposed for Alternative 5 Modified are the same as for Alternative 4 Modified, with connections at I-215 and SR-79. However, the I-215 system interchange differs from that in Alternative 4 Modified as it connects the MCP to I-215 near Rider Street. As with Alternative 4 Modified, the system interchange at I-215 is proposed as a three-level interchange that will not preclude possible future connections to the west. The interchange will be approximately 75 to 100 ft above ground level.

Locations of the service interchanges proposed for Alternative 5 Modified are the same as those in Alternative 4 Modified: Perris Boulevard, Evans Road, Ramona Expressway/Antelope Road, Bernasconi Road, Reservoir Road, Town Center Boulevard (proposed new arterial associated with future proposed development), Park Center Boulevard (proposed new arterial associated with future proposed development), and Warren Road.

Alternative 5 Modified also includes the same improvements to I-215 as described above for Alternative 4 Modified.

Alternative 9 Modified: Placentia Avenue. Similar to Alternatives 4 and 5 Modified, Alternative 9 Modified is a six-lane controlled-access freeway. However, Alternative 9 Modified follows a more southerly alignment through the City of Perris along Placentia Avenue (as shown in Figure 1.2).

System interchanges are proposed for all Build Alternatives, including Alternative 9 Modified, at I-215 and SR-79. The system interchange at SR-79 is the same as those proposed for Alternative 4 Modified and Alternative 5 Modified. However, the I-215 system interchange differs from those in Alternatives 4 and 5 Modified as it connects the MCP to I-215 near Placentia Avenue. As with Alternatives 4 and 5 Modified, the system interchange at I-215 is proposed as a three-level interchange that will not preclude possible future connections to the west. The interchange will be approximately 75 to 100 ft above ground level.

Service interchanges are also proposed for Alternative 9 Modified at the following locations: Redlands Avenue, Evans Road, Ramona Expressway, Bernasconi Road/Antelope Road, Reservoir Road, Town Center Boulevard (proposed new arterial associated with future proposed development), Park Center Boulevard (proposed new arterial associated with future proposed development), and Warren Road.

Alternative 9 Modified also includes the same improvements to I-215 as described above for Alternative 4 Modified. In addition, Alternative 9 Modified has been designed to avoid Paragon Park.

$PM_{2.5}$ AND PM_{10} HOT-SPOT METHODOLOGY

The new Final Rule establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. The proposed project is in the South Coast Air Basin (Basin), which has been designated as a federal nonattainment area for $PM_{2.5}$ and PM_{10}; therefore, a hot-spot analysis is required.

A hot-spot analysis is defined in the Code of Federal Regulations (CFR) (40 CFR 93.101) as an estimation of likely future localized pollutant concentrations and a comparison of those concentrations to the relevant air quality standards. A hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area, such as for congested roadway intersections and highways or transit terminals. Such an analysis is a means of demonstrating that a transportation project meets Clean Air Act (CAA) conformity requirements to support State and local air quality goals with respect to potential localized air quality impacts. When a hot-spot analysis is required, it is included within the project-level conformity determination that is made by the FHWA or the Federal Transit Administration (FTA).

Section 176(c)(1)(B) of the CAA is the statutory criterion that must be met by all projects in nonattainment and maintenance areas that are subject to transportation conformity. Section 176(c)(1)(B) states that federally supported transportation projects must not "cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area."

Ambient Air Quality Standards

$PM_{2.5}$ nonattainment and maintenance areas are required to attain and maintain two ambient air quality standards (AAQS):

- **24-hour Standard:** 35 micrograms per cubic meter ($\mu g/m^3$).
- **Annual Standard:** 15.0 $\mu g/m^3$

The current 24-hour standard is based on a three-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations. The current annual standard is based on a three-year average of annual mean $PM_{2.5}$ concentrations. A $PM_{2.5}$ hot-spot analysis must consider both standards unless it is determined for a given area in which meeting the controlling standard would ensure that CAA requirements are met for both standards. The interagency consultation process should be used to discuss how the qualitative $PM_{2.5}$ hot-spot analysis meets statutory and regulatory requirements for both $PM_{2.5}$ standards, depending on the factors that are evaluated for a given project.

PM_{10} nonattainment and maintenance areas are required to attain the following standard:

- **24-hour Standard:** 150 $\mu g/m^3$

The 24-hour PM_{10} standard is attained when the average number of exceedances in the previous three calendar years is less than or equal to 1.0. An exceedance occurs when a 24-hour concentration of 155 $\mu g/m^3$ or greater is measured at a site. The annual PM_{10} standard of 50 $\mu g/m^3$ is no longer used for determining the federal attainment status. The interagency consultation process should be used to discuss how the qualitative PM_{10} hot-spot analysis meets statutory and regulatory requirements for the PM_{10} standards, depending on the factors that are evaluated for a given project.

To meet statutory requirements, the 2006 Final Rule requires $PM_{2.5}$ and PM_{10} hot-spot analyses to be performed for Projects of Air Quality Concern (POAQC). The Final Rule states that projects not

identified in 40 CFR 93.123(b)(1) as POAQC have met statutory requirements without any further hot-spot analyses (40 CFR 93.116[a]).

$PM_{2.5}$ AND PM_{10} HOT-SPOT ANALYSIS

Projects of Air Quality Concern

The first step in the hot-spot analysis is to determine whether a project meets the standard for a POAQC. The EPA specified in 40 CFR 93.123(b)(1) of the 2006 Final Rule that POAQC are certain highway and transit projects that involve significant levels of diesel vehicle traffic, or any other project that is identified in the $PM_{2.5}$ and PM_{10} State Implementation Plan (SIP) as a localized air quality concern. The 2006 Final Rule defines the POAQC that require a $PM_{2.5}$ and PM_{10} hot-spot analysis in 40 CFR 93.123(b)(1) as:

i. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

ii. Projects affecting intersections that are at level of service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; or

v. Projects in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The proposed MCP project would meet the criteria in Items i and ii above, as it would construct a new highway facility that would impact existing intersections. Therefore, this project is considered to be a POAQC, and a qualitative project-level $PM_{2.5}$ and PM_{10} hot-spot analysis has been conducted to assess whether the project would cause or contribute to any new localized $PM_{2.5}$ or PM_{10} violations, increase the frequency or severity of any existing violations, or delay timely attainment of the $PM_{2.5}$ and PM_{10} AAQS.

Types of Emissions Considered

In accordance with the EPA/FHWA Guidance, this hot-spot analysis is based on directly emitted and re-entrained $PM_{2.5}$ and PM_{10} emissions. Tailpipe, brake wear, tire wear, and road dust $PM_{2.5}$ and PM_{10} emissions were considered in this hot-spot analysis.

Vehicles cause dust from paved and unpaved roads to be re-entrained, or resuspended, in the atmosphere. According to the 2006 Final Rule, road dust emissions are to be considered for PM_{10} hot-spot analyses. For $PM_{2.5}$, road dust emissions are only to be considered in hot-spot analyses if the EPA or the State air agency has made a finding that such emissions are a significant contributor to the $PM_{2.5}$ air quality problem (40 CFR 93.102(b)(3)). The EPA has published a guidance on the use of

AP-42 for re-entrained road dust for SIP development and conformity (August 2007); therefore, re-entrained $PM_{2.5}$ is considered in this analysis.

Secondary particles formed through $PM_{2.5}$ and PM_{10} precursor emissions from a transportation project take several hours to form in the atmosphere, giving emissions time to disperse beyond the immediate project area of concern for localized analyses; therefore, they were not considered in this hot-spot analysis. Secondary emissions of $PM_{2.5}$ and PM_{10} are considered as part of the regional emission analysis prepared for the conforming RTP and Federal Transportation Improvement Program (FTIP).

According to the project schedule, no phase of construction would last more than five years, and construction-related emissions may be considered temporary; therefore, any construction-related $PM_{2.5}$ and PM_{10} emissions due to this project were not included in this hot-spot analysis. This project will comply with the South Coast Air Quality Management District (SCAQMD) Fugitive Dust Rules for fugitive dust during construction of this project. In addition, per Transportation Conformity Rule 93.117, the project will be required to comply with any $PM_{2.5}$ and PM_{10} control measures in the SIP. Excavation, transportation, placement, and handling of excavated soils will result in no visible dust migration. A water truck or tank will be available within the project limits at all times to suppress and control the migration of fugitive dust from earthwork operations.

Analysis Method

According to hot-spot methodology, estimates of future localized $PM_{2.5}$ and PM_{10} pollutant concentrations need to be determined. This analysis makes those estimates by extrapolating present $PM_{2.5}$ and PM_{10} pollutant concentrations from air quality data measured at monitoring stations in the vicinity of the proposed project. The data from these stations are combined with projections from the 2003 Air Quality Management Plan (AQMP) prepared by the SCAQMD and examined for trends in order to predict future conditions in the project vicinity. Additionally, the impacts of the project on the regional $PM_{2.5}$ and PM_{10} emissions and the likelihood of these impacts interacting with the ambient $PM_{2.5}$ and PM_{10} levels to cause hot spots are discussed.

Data Considered

The closest air monitoring stations to the project site are the Riverside-Rubidoux, Riverside-Magnolia, and the Perris Stations. Of these monitoring stations, Riverside-Rubidoux and Riverside-Magnolia monitor $PM_{2.5}$ concentrations. The Riverside-Rubidoux and Perris Stations monitor PM_{10} concentrations. These monitoring stations are located in Riverside County within the vicinity of SR-60, SR-91, and I-215. The Riverside-Rubidoux Station is located approximately 2,000 feet from SR-60, which currently carries 15,000 daily truck trips. The Riverside-Magnolia Station is located approximately 2,500 ft from SR-91, which currently carries 8,300 daily truck trips. The Perris Station is located approximately 1,000 ft from I-215, which currently carries 11,300 daily truck trips. These truck traffic volumes are all higher than the peak volume of 4,690 daily truck trips projected for the proposed MCP project in 2040. Therefore, the air quality concentrations monitored at these stations are a conservative representation of the conditions within the project area. The locations of the air monitoring stations relative to the project area are shown in Figure 3.

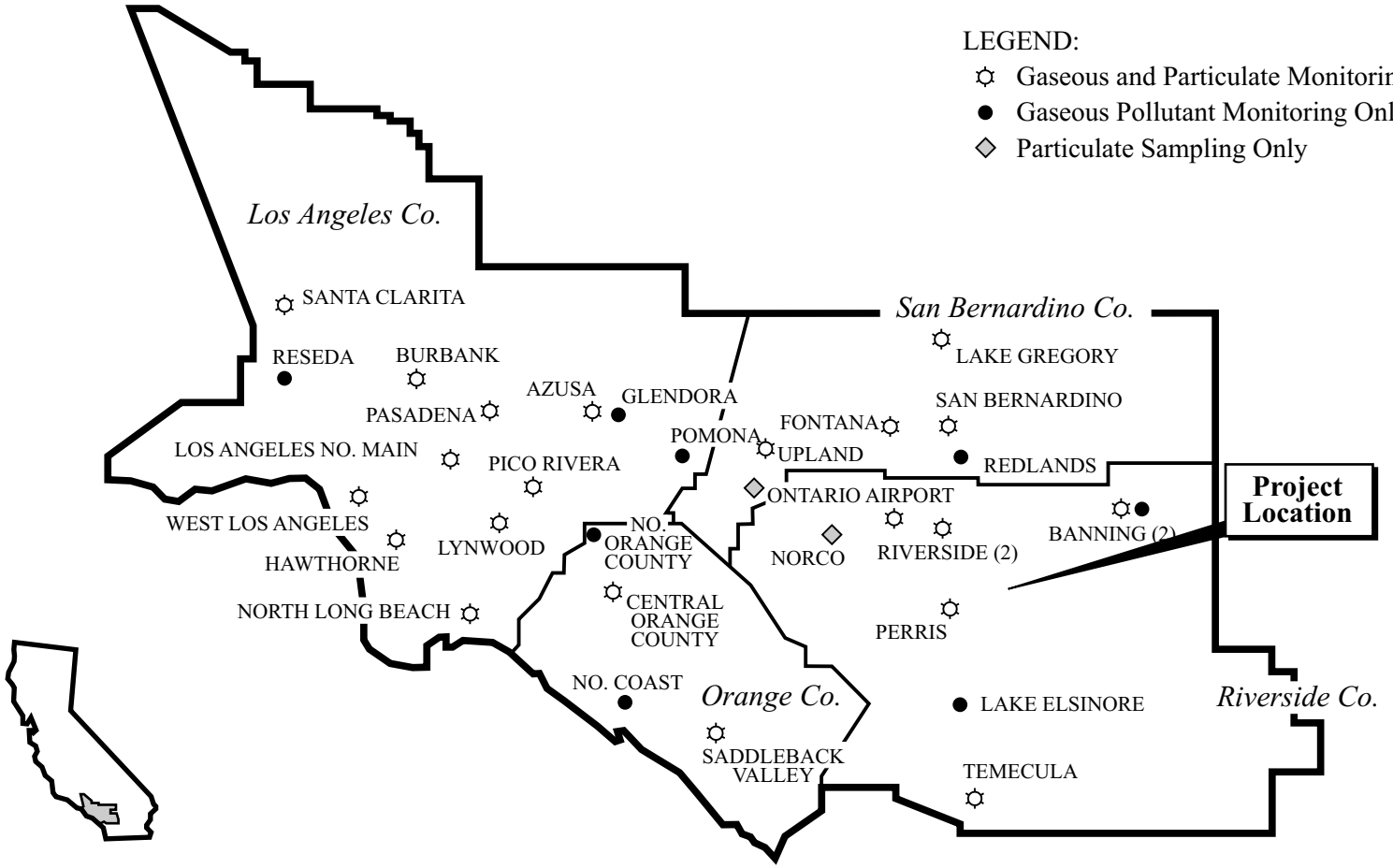

Figure 3

NO SCALE

SCAQMD Air Monitoring Network
Within the South Coast Air Basin
PM 0.0/16.3 EA 08-0F3200

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Trends in Baseline PM2.5 Concentrations. The monitored PM2.5 concentrations at the Riverside-Rubidoux and Riverside-Magnolia Stations are shown in Table A. These data show that the federal 24-hour PM2.5 AAQS (35 µg/m3) has been exceeded at the Riverside-Rubidoux and Riverside-Magnolia stations in each of the past six years. In addition, the annual average PM2.5 AAQS (15 µg/m3) at the Riverside-Rubidoux Station was exceeded in all six years and exceeded at the Riverside-Magnolia Station in 5 out of 6 years; however, the concentrations continue to diminish every year.

Table A: Ambient $PM_{2.5}$ Monitoring Data (µg/m^3)

	2004	2005	2006	2007	2008	2009
Riverside–Rubidoux Air Quality Monitoring Station						
3-year average 98th percentile	67.5	64.8	57.4	55.7	49.9	45.0
Exceeds federal 24-hour standard (35 µg/m^3)?	Yes	Yes	Yes	Yes	Yes	Yes
3-year National annual average	24.8	22.6	20.6	19.6	18.1	16.8
Exceeds federal annual average standard (15 µg/m^3)?	Yes	Yes	Yes	Yes	Yes	Yes
Riverside–Magnolia Air Quality Monitoring Station						
3-year average 98th percentile	57.9	50.3	47.5	48.9	48.2	43.6
Exceeds federal 24-hour standard (35 µg/m^3)?	Yes	Yes	Yes	Yes	Yes	Yes
3-year National annual average	23.5	20.4	18.5	17.7	16.1	14.9
Exceeds federal annual average standard (15 µg/m^3)?	Yes	Yes	Yes	Yes	Yes	No

Source: ARB Web site: http://www.arb.ca.gov/adam/, May 2011.

Projected 24-hour Concentrations. The levels of $PM_{2.5}$ in the project vicinity exceeded the federal 24-hour standard in each of the past six years of monitored data. Table V-2-16 in the 2007 AQMP estimates that the 24-hour $PM_{2.5}$ concentration at the Riverside-Rubidoux Station will be 49.3 µg/m^3 in 2015. However, based on the data in Table A, the concentration 2009 is below the level that the AQMP has projected for 2015. Extrapolating from the data in Table A, it is estimated that the concentrations in the project area would not exceed the federal 24-hour standard of 35 µg/m^3 by 2012. By 2020 it is estimated that the 24-hour $PM_{2.5}$ level would be 30.9 µg/m^3; 12 percent below the federal standard. In 2040 the three-year 98th percentile 24-hour concentration is projected to be 13 µg/m^3, which is approximately 37 percent of the federal standard.

Projected Annual Concentrations. While the current levels of $PM_{2.5}$ in the project vicinity are generally above the federal annual standard, indications are that levels in the future will continue to decrease. To estimate the future background $PM_{2.5}$ concentrations, an exponential projection was made of the three-year annual average levels. By 2020 the concentration within the vicinity of the Riverside-Rubidoux Station is projected to be 6.9 µg/m^3, which is approximately 46 percent of the federal standard. In 2040 the three-year annual average concentration is projected to be 1.5 µg/m^3, which is approximately 10 percent of the federal standard.

By 2020 the concentration within the vicinity of the Riverside-Magnolia Station is projected to be 6.4 µg/m^3, which is approximately 43 percent of the federal standard. In 2040 the three-year annual average concentration is projected to be 1.2 µg/m^3, which is approximately 8 percent of the federal standard.

Trends in Baseline PM_{10} Concentrations. The PM_{10} concentrations monitored at the Riverside-Rubidoux and Perris Stations are shown in Table B. With the exception of 2007, the federal 24-hour PM_{10} AAQS (150 µg/m^3) was not exceeded between 2004 and 2009.

Table B: Ambient PM_{10} Monitoring Data (µg/m^3)

	2004	2005	2006	2007	2008	2009
Riverside–Rubidoux Air Quality Monitoring Station						
First Highest	137	123	109	559	115	77
Second Highest	131	98	101	118	102	77
Third Highest	122	96	100	117	92	75
Fourth Highest	119	92	100	111	84	75
No. of days above national 24-hour standard (150 µg/m^3)	0	0	0	1	0	0
Perris Air Quality Monitoring Station						
First Highest	83	80	125	1,212	85	80
Second Highest	79	70	101	167	68	66
Third Highest	72	69	88	120	65	57
Fourth Highest	69	66	80	92	62	56
No. of days above national 24-hour standard (150 µg/m^3)	0	0	0	2	0	0

Source: ARB Web site: http://www.arb.ca.gov/adam/, May 2011.

The 2007 AQMP (SCAQMD) reports that since the federal annual PM_{10} standard has been revoked, the Basin is expected to be declared in attainment for the 24-hour federal PM_{10} standard since 2000. Table V-3-1 in the 2007 AQMP lists the projected 24-hour PM_{10} concentrations at various stations within the Basin. It is estimated that the 24-hour concentration at the Perris Station (the closest station to the project area listed in the AQMP) will be 88 µg/m^3 by 2015, 59 percent of the federal standard. By 2020 the 24-hr concentration is estimated to be less than 50 percent of the federal standard.

Transportation and Traffic Conditions

Existing, interim (2020), and future (2040) no build average daily traffic (ADT) volumes, truck percentages, and average daily truck volumes for Ramona Expressway in the project area are shown in Table C. The traffic volumes along the local roads include 5 percent trucks. The table indicates that Ramona Expressway currently experiences fewer than 10,000 trucks annual average daily traffic (AADT).

Table C: Existing (2010) and No Build (2020 and 2040) Average Daily Traffic Volumes (Truck Average Daily Volumes)

Roadway Link	Existing (2010)	2020 No Build	2040 No Build
Ramona Expressway from I-215 to Perris Boulevard	24,400 (1,220)	42,600 (2,130)	79,000 (3,950)
Ramona Expressway from Perris Boulevard to Evans Road	21,300 (1,065)	33,600 (1,680)	58,200 (2,910)
Ramona Expressway from Evans Road to Bernasconi Road	14,800 (740)	30,000 (1,500)	60,500 (3,025)
Ramona Expressway from Bernasconi Road to Reservoir Avenue	10,100 (505)	27,900 (1,395)	63,500 (3,175)
Ramona Expressway from Reservoir Avenue to Town Center Boulevard	10,300 (515)	27,000 (1,350)	60,500 (3,025)
Ramona Expressway from Town Center Boulevard to Park Center Boulevard	10,200 (510)	18,700 (935)	35,800 (1,790)
Ramona Expressway from Park Center Boulevard to Warren Road	10,400 (520)	20,600 (1,030)	40,900 (2,045)
Ramona Expressway from Warren Road to SR-79	12,100 (605)	20,100 (1,005)	36,000 (1,800)

Source: VRPA, April 2011.

Traffic Changes Due to the Proposed Project

The proposed project is a new roadway construction project. Based on the Mid County Parkway Traffic Technical Report (VRPA, April 2011), the proposed project would increase the traffic volumes along Ramona Expressway. However, the traffic volumes along MCP would not exceed 125,000 ADT. In addition, the total truck average daily trips would remain below 10,000. The future traffic volumes along MCP for each of the build alternatives are shown in Tables D and E for 2020 and 2040, respectively.

Tables F and J show the 2020 and 2040 No Build/County General Plan levels of service (LOS) and delay in the project area for the a.m. and p.m. peak hours. Tables G, H, and I show the 2020 LOS and delay in the project area for Build Alternatives 4, 5, and 9, respectively. Tables K, L, and M show the 2040 LOS and delay in the project area for Build Alternatives 4, 5, and 9, respectively. As shown, the proposed project would improve the LOS and reduce the delay at some intersections in the project area while worsening the LOS and increasing the delay at other intersections within the project area. Therefore, a vehicle emission analysis was prepared to determine the proposed project's effect on the region attaining the federal $PM_{2.5}$ and PM_{10} AAQS.

Table D: 2020 Project Alternative Average Daily Traffic Volumes (Truck Average Daily Volumes)

Roadway Link	Alternative 4 Traffic Volumes	Alternative 5 Traffic Volumes	Alternative 9 Traffic Volumes
MCP from I-215 to Perris Boulevard	58,800 (2,940)	57,200 (2,860)	51,400 (2,570)
MCP from Perris Boulevard to Evans Road	53,600 (2,680)	55,600 (2,780)	51,600 (2,580)
MCP from Evans Road to Ramona Expressway	57,200 (2,860)	57,600 (2,880)	52,800 (2,640)
MCP from Ramona Expressway to Bernasconi Road	63,200 (3,160)	63,800 (3,190)	63,600 (3,180)
MCP from Bernasconi Road to Reservoir Avenue	62,400 (3,120)	63,000 (3,150)	63,600 (3,180)
MCP from Reservoir Avenue to Town Center Boulevard	59,800 (2,990)	60,400 (3,020)	62,600 (3,130)
MCP from Town Center Boulevard to Park Center Boulevard	52,800 (2,640)	53,200 (2,660)	48,000 (2,400)
MCP from Park Center Boulevard to Warren Road	51,400 (2,570)	52,000 (2,600)	52,600 (2,630)
MCP from Warren Road to SR-79	44,000 (2,200)	44,400 (2,220)	43,800 (2,190)

Source: VRPA, April 2011.

Table E: 2040 Project Alternative Average Daily Traffic Volumes (Truck Average Daily Volumes)

Roadway Link	Alternative 4 Traffic Volumes	Alternative 5 Traffic Volumes	Alternative 9 Traffic Volumes
MCP from I-215 to Perris Boulevard	69,600 (3,480)	77,200 (3,860)	76,200 (3,810)
MCP from Perris Boulevard to Evans Road	84,600 (4,230)	83,200 (4,160)	81,800 (4,090)
MCP from Evans Road to Ramona Expressway	84,000 (4,200)	82,800 (4,140)	79,600 (3,980)
MCP from Ramona Expressway to Bernasconi Road	93,600 (4,680)	93,400 (4,670)	93,800 (4,690)
MCP from Bernasconi Road to Reservoir Avenue	93,600 (4,380)	93,400 (4,670)	93,800 (4,690)
MCP from Reservoir Avenue to Town Center Boulevard	88,800 (4,440)	88,600 (4,430)	88,800 (4,440)
MCP from Town Center Boulevard to Park Center Boulevard	68,200 (3,410)	68,400 (3,420)	68,200 (3,410)
MCP from Park Center Boulevard to Warren Road	72,800 (3,640)	72,800 (3,640)	72,600 (3,630)
MCP from Warren Road to SR-79	59,200 (2,960)	55,600 (2,780)	55,000 (2,750)

Source: VRPA, April 2011.

Table F: 2020 No Project/County General Plan Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
1.	Alessandro Blvd and Meridian Parkway	D	38.9	**F**	**>80.0**
2.	Alessandro Blvd and I-215 Southbound Ramps	B	11.7	C	25.7
3.	Alessandro Blvd and I-215 Northbound Ramps	C	27.5	D	53.3
4.	Alessandro Blvd and Valley Springs Pkwy	**E**	**56.2**	**F**	**>80.0**
5.	Cactus Avenue and Innovation Drive	B	18.2	B	19.1
6.	Cactus Avenue and Ellsworth Street	D	47.1	C	25.7
7.	Van Buren Boulevard and I-215 Northbound Ramps	B	10.8	B	10.6
8.	Nuevo Road and Old Nuevo Road	C	27.3	C	28.2
9.	Perris Boulevard and Markham Street	C	24.0	C	26.7
10.	Perris Boulevard and Ramona Expressway	D	43.6	D	40.8
11.	Perris Boulevard and Morgan Street	C	24.1	C	26.4
12.	Ramona Expressway and Town Center Blvd	**E**	**75.5**	**E**	**60.2**
13.	Ramona Expressway and SR 79	C	20.9	B	19.5

LOS = Level of Service
sec = seconds

Table G: 2020 Alternative 4 Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
1.	Alessandro Boulevard and Meridian Parkway	C	26.2	**E**	**68.3**
2.	Alessandro Boulevard and I-215 Southbound Ramps	A	8.6	D	37.0
3.	Alessandro Boulevard and I-215 Northbound Ramps	B	14.6	**E**	**72.7**
4.	Alessandro Boulevard and Valley Spring Parkway	C	23.5	**F**	**>80.0**
5.	Cactus Ave and Elsworth Street	D	46.7	C	25.6
6.	Cactus Ave and Innovation Dr	B	18.3	B	19.2
7.	Van Buren Boulevard and I-215 Northbound Ramps	B	10.8	A	9.4
8.	Nuevo Road and Old Nuevo Road	C	26.7	C	26.2
9.	Perris Blvd and Markham St	B	15.0	B	16.6
10.	Perris Blvd and MCP Westbound Ramps	A	7.4	A	8.6
11.	Perris Blvd and MCP Eastbound Ramps	A	8.7	A	9.7
12.	Perris Blvd and Ramona Expressway	C	21.7	C	23.2
13.	Perris Blvd and Morgan St	B	19.7	C	20.7
14.	Town Center Boulevard and MCP Westbound Ramps	B	11.8	A	4.2
15.	Sanderson Ave and MCP	C	31.7	D	38.4
16.	MCP and SR 79	B	19.0	B	19.0
17.	Ramona Expressway and MCP	C	25.4	C	27.9

LOS = Level of Service
sec = seconds

Table H: 2020 Alternative 5 Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1.	Alessandro Blvd and Meridian Parkway	D	41.4	**F**	**>80.0**
2.	Alessandro Blvd and I-215 Southbound Ramps	B	10.2	**E**	**65.6**
3.	Alessandro Blvd and I-215 Northbound Ramps	B	15.7	**E**	**75.3**
4.	Alessandro Blvd and Valley Springs Parkway	C	21.8	D	38.2
5.	Cactus Avenue and Innovation Drive	B	18.3	B	19.3
6.	Cactus Avenue and Ellsworth Street	D	46.7	C	25.6
7.	Van Buren Boulevard and I-215 Northbound Ramps	A	4.6	A	9.8
8.	Nuevo Road and Old Nuevo Road	C	26.5	C	26.2
9.	Perris Blvd and Morgan St	B	19.2	C	20.2
10.	Perris Blvd and MCP Westbound Ramps	A	9.6	B	10.2
11.	Perris Blvd and MCP Eastbound Ramps	A	9.5	A	9.3
12.	Perris Blvd and Ramona Expressway	C	20.8	C	21.6
13.	Perris Blvd and Markham Street	B	13.9	B	15.0
14.	Town Center Boulevard and MCP Westbound Ramps	A	5.6	A	6.1
15.	Sanderson Ave and MCP	C	31.7	D	38.4
16.	MCP and SR 79	C	32.2	C	30.9
17.	Ramona Expressway and MCP	C	29.5	C	28.0

Source: VRPA, April 2011.
LOS = Level of Service
sec = seconds

Table I: 2020 Alternative 9 Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1.	Alessandro Blvd and Meridian Parkway	D	39.8	**F**	**>80.0**
2.	Alessandro Blvd and I-215 Southbound Ramps	B	10.6	D	43.4
3.	Alessandro Blvd and I-215 Northbound Ramps	C	28.3	D	47.1
4.	Alessandro Blvd and Valley Springs Parkway	D	46.1	**F**	**>80.0**
5.	Cactus Avenue and Innovation Drive	B	18.4	B	19.2
6.	Cactus Avenue and Ellsworth Street	D	44.5	C	26.0
7.	Van Buren Boulevard and I-215 Northbound Ramps	A	7.8	A	8.4
8.	Nuevo Road and Old Nuevo Road	C	26.3	C	26.2
9.	Perris Boulevard and Markham Street	B	16.6	B	17.1
10.	Perris Boulevard and Ramona Expressway	C	28.4	C	27.3
11.	Perris Boulevard and Morgan Street	C	24.4	C	24.1
12.	Town Center Boulevard and MCP Westbound Ramps	B	18.0	D	38.7
13.	Sanderson Ave and MCP	C	31.7	D	38.4
14.	MCP and SR 79	B	19.1	B	19.2
15.	Ramona Expressway and MCP	C	26.6	C	27.9

Source: VRPA, April 2011.
LOS = Level of Service
sec = seconds

Table J: 2040 No Project/County General Plan Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
1.	Alessandro Blvd and Meridian Parkway	**F**	**>80.0**	**F**	**>80.0**
2.	Alessandro Blvd and I-215 Southbound Ramps	**E**	**72.1**	**F**	**>80.0**
3.	Alessandro Blvd and I-215 Northbound Ramps	**F**	**>80.0**	**F**	**>80.0**
4.	Alessandro Blvd and Valley Springs Pkwy	**E**	**72.8**	**F**	**>80.0**
5.	Cactus Avenue and Innovation Drive	C	29.1	**F**	**>80.0**
6.	Cactus Avenue and Ellsworth Street	**F**	**>80.0**	D	41.1
7.	Van Buren Boulevard and I-215 Northbound Ramps	B	18.0	B	13.1
8.	Nuevo Road and Old Nuevo Road	D	42.7	D	38.4
9.	Perris Boulevard and Markham Street	B	20.0	C	20.9
10.	Perris Boulevard and Ramona Expressway	D	41.5	D	42.2
11.	Perris Boulevard and Morgan Street	C	28.0	C	29.8
12.	Ramona Expressway and Town Center Blvd	D	48.7	D	43.5
13.	Ramona Expressway and SR 79	**F**	**>80.0**	**F**	**>80.0**

LOS = Level of Service
sec = seconds

Table K: 2040 Alternative 4 Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
1.	Alessandro Boulevard and Meridian Parkway	**F**	**>80.0**	**F**	**>80.0**
2.	Alessandro Boulevard and I-215 Southbound Ramps	E	79.5	**F**	**>80.0**
3.	Alessandro Boulevard and I-215 Northbound Ramps	D	50.6	**F**	**>80.0**
4.	Alessandro Boulevard and Valley Spring Parkway	D	51.8	**F**	**>80.0**
5.	Cactus Ave and Elsworth Street	**F**	**>80.0**	D	40.4
6.	Cactus Ave and Innovation Dr	D	51.6	**F**	**>80.0**
7.	Van Buren Boulevard and I-215 Northbound Ramps	C	31.1	C	20.0
8.	Nuevo Road and Old Nuevo Road	C	34.7	D	38.4
9.	Perris Blvd and Markham St	**E**	**69.0**	**F**	**>80.0**
10.	Perris Blvd and MCP Westbound Ramps	**F**	**>80.0**	**F**	**>80.0**
11.	Perris Blvd and MCP Eastbound Ramps	B	19.9	D	53.4
12.	Perris Blvd and Ramona Expressway	**F**	**>80.0**	**F**	**>80.0**
13.	Perris Blvd and Morgan Street	D	39.5	D	47.5
14.	Town Center Boulevard and MCP Westbound Ramps	**E**	**55.4**	B	17.0
15.	Sanderson Ave and MCP	D	40.2	**F**	**>80.0**
16.	MCP and SR 79	C	25.8	C	30.3
17.	Ramona Expressway and MCP	D	36.6	**F**	**>80.0**

LOS = Level of Service
sec = seconds

Table L: 2040 Alternative 5 Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1.	Alessandro Blvd and Meridian Parkway	**F**	**>80.0**	**F**	**>80.0**
2.	Alessandro Blvd and I-215 Southbound Ramps	E	77.5	**F**	**>80.0**
3.	Alessandro Blvd and I-215 Northbound Ramps	D	51.4	**F**	**>80.0**
4.	Alessandro Blvd and Valley Springs Parkway	D	50.7	**F**	**>80.0**
5.	Cactus Avenue and Innovation Drive	D	54.7	**F**	**>80.0**
6.	Cactus Avenue and Ellsworth Street	B	16	C	20.1
7.	Van Buren Boulevard and I-215 Northbound Ramps	C	20.1	C	20.4
8.	Nuevo Road and Old Nuevo Road	D	35.5	D	40.8
9.	Perris Blvd and Morgan St	D	51.9	**F**	**>80.0**
10.	Perris Blvd and MCP Westbound Ramps	B	17.3	B	13.6
11.	Perris Blvd and MCP Eastbound Ramps	B	13.1	B	16.0
12.	Perris Blvd and Placentia Street	C	31.4	**E**	**56.6**
13.	Perris Blvd and Markham Street	B	18.6	C	20.4
14.	Town Center Boulevard and MCP Westbound Ramps	C	22.7	C	20.3
15.	Sanderson Ave and MCP	C	33.8	**F**	**>80.0**
16.	MCP and SR 79	**F**	**>80.0**	**F**	**>80.0**
17.	Ramona Expressway and MCP	**F**	**>80.0**	**F**	**>80.0**

Source: VRPA, April 2011.
LOS = Level of Service
sec = seconds

Table M: 2040 Alternative 9 Intersection Levels of Service

	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1.	Alessandro Blvd and Meridian Parkway	**F**	**>80.0**	**F**	**>80.0**
2.	Alessandro Blvd and I-215 Southbound Ramps	**F**	**>80.0**	**F**	**>80.0**
3.	Alessandro Blvd and I-215 Northbound Ramps	**E**	**79.8**	**F**	**>80.0**
4.	Alessandro Blvd and Valley Springs Parkway	**F**	**>80.0**	**F**	**>80.0**
5.	Cactus Avenue and Innovation Drive	**F**	**>80.0**	**F**	**>80.0**
6.	Cactus Avenue and Ellsworth Street	**F**	**>80.0**	**F**	**>80.0**
7.	Van Buren Boulevard and I-215 Northbound Ramps	**E**	**79.8**	**F**	**>80.0**
8.	Nuevo Road and Old Nuevo Road	C	33.6	D	39.3
9.	Perris Boulevard and Markham Street	C	20.2	C	22.1
10.	Perris Boulevard and Ramona Expressway	C	30.0	C	31.0
11.	Perris Boulevard and Morgan Street	E	79.1	E	61.6
12.	Town Center Boulevard and MCP Westbound Ramps	**E**	**62.9**	B	19.5
13.	Sanderson Ave and MCP	C	34.8	D	51.9
14.	MCP and SR 79	C	25.9	C	33.9
15.	Ramona Expressway and MCP	D	36.6	D	48.8

Source: VRPA, April 2011.
LOS = Level of Service
sec = seconds

Daily Vehicle Emission Changes Due to the Proposed Project

The traffic study (VRPA, April 2011) calculated the daily vehicle miles traveled (VMT) and daily vehicle hours traveled (VHT) for all of the vehicle trips within the MCP region. This traffic data, in conjunction with the EMFAC2007 emission model, was used to calculate the $PM_{2.5}$ and PM_{10} exhaust, tire wear, and brake wear emissions for each of the project alternatives. EMFAC2007 does not estimate road dust emissions; therefore, the emission rates listed in Section 13.2.1 of EPA's AP-42 were used to calculated the road dust $PM_{2.5}$ and PM_{10} emissions. The exhaust and dust emissions generated within the MCP region are listed in Tables N and O for $PM_{2.5}$ and PM_{10}, respectively. As shown, implementation of the proposed project would increase the total $PM_{2.5}$ and PM_{10} emissions generated within the MCP region. The increase in emissions is due to the increase in VMT within the MCP region. The results of the modeling are included in Appendix PM-A.

Table N: Daily $PM_{2.5}$ Emissions (pounds per day)

Traffic Condition	Exhaust Emissions	Tire Wear	Brake Wear	Road Dust	Total	Change from No Build	% Change from No Build
Existing	3,724	258	775	23,951	28,708	-	-
2020 No Build	4,079	389	1,166	36,049	41,683	-	-
2020 Alt 4	4,089	389	1,168	36,110	41,756	73	0.18%
2020 Alt 5	4,087	389	1,168	36,102	41,746	63	0.15%
2020 Alt 9	4,091	389	1,168	36,106	41,756	73	0.17%
2040 No Build	5,075	549	1,648	50,938	58,210	-	-
2040 Alt 4	5,097	551	1,653	51,086	58,387	177	0.30%
2040 Alt 5	5,096	551	1,653	51,083	58,382	172	0.30%
2040 Alt 9	5,101	551	1,654	51,119	58,425	215	0.37%

Source: LSA Associates, Inc., May 2011.

Table O: Daily PM_{10} Emissions (pounds per day)

Traffic Condition	Exhaust Emissions	Tire Wear	Brake Wear	Road Dust	Total	Change from No Build	% Change from No Build
Existing	4,036	1,162	1,679	52,495	59,372	-	-
2020 No Build	4,398	1,750	2,527	79,012	87,687	-	-
2020 Alt 4	4,411	1,753	2,532	79,144	87,839	152	0.17%
2020 Alt 5	4,409	1,752	2,531	79,127	87,819	132	0.15%
2020 Alt 9	4,413	1,752	2,531	79,137	87,834	147	0.17%
2040 No Build	5,538	2,472	3,571	111,644	123,226	-	-
2040 Alt 4	5,563	2,479	3,581	111,969	123,592	366	0.30%
2040 Alt 5	5,562	2,479	3,581	111,962	123,584	358	0.29%
2040 Alt 9	5,568	2,481	3,584	112,041	123,674	448	0.36%

Source: LSA Associates, Inc., May 2011.

By 2020 the 24-hour $PM_{2.5}$ concentrations within the project area are projected to be 88 percent of the federal standard. The annual $PM_{2.5}$ concentrations are projected to be 46 percent of the federal standard. The 24-hour PM_{10} concentration is projected to be less than 50 percent of the federal standard. Therefore, the project-related 0.15 to 0.18 percent increase in $PM_{2.5}$ and PM_{10} emissions would not result in a new exceedance of the $PM_{2.5}$ or PM_{10} federal standards.

By 2040 the 24-hour $PM_{2.5}$ concentrations within the project area are projected to be 37 percent of the federal standard. The annual $PM_{2.5}$ concentrations are projected to be 10 percent of the federal standard. The 24-hour PM_{10} concentration is projected to be less than 50 percent of the federal standard. Therefore, the project-related 0.29 to 0.37 percent increase in $PM_{2.5}$ and PM_{10} emissions would not result in a new exceedance of the $PM_{2.5}$ or PM_{10} federal standards.

CONCLUSION

Transportation conformity is required under Section 176(c) of the CAA to ensure that federally supported highway and transit project activities are consistent with the purpose of the SIP. Conformity for the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant AAQS. As required by the 2006 Final Rule, this qualitative $PM_{2.5}$ and PM_{10} hot-spot analysis demonstrates that this project meets the CAA conformity requirements to support State and local air quality goals with respect to potential localized air quality impacts.

It is not expected that changes to $PM_{2.5}$ and PM_{10} emissions levels associated with the proposed project would result in new violations of the federal air quality standards for the following reasons:

- The future truck traffic volumes along MCP would not exceed 10,000 ADT.
- With the exception of 2007, the ambient PM_{10} concentrations have not exceeded the 24-hour or annual federal standard.
- Based on the projected PM_{10} concentrations listed in the 2007 AQMP, the 24-hour PM_{10} concentrations would be 59 percent of the federal standard by 2015 and below 50 percent of the federal standards by 2020.
- Based on the local monitoring data, the 24-hour $PM_{2.5}$ concentrations within the project area would be reduced to 88 percent of the federal standard by 2020 and 37 percent of the federal standard by 2040.
- Based on the local monitoring data, the annual average $PM_{2.5}$ concentrations within the project area would be reduced to 46 percent of the federal standard by 2020 and 10 percent of the federal standard by 2040.
- The project-related 0.15 to 0.37 percent increase in regional $PM_{2.5}$ and PM_{10} emissions would not result in any new exceedances of the federal standards in 2020 or 2040.

For these reasons, future new or worsened $PM_{2.5}$ and PM_{10} violations of any standards are not anticipated; therefore, the project meets the conformity hot-spot requirements in 40 CFR 93-116 and 93-123 for both $PM_{2.5}$ and PM_{10}.

REFERENCES

United States Environmental Protection Agency (EPA). 2006a. "Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" (EPA 420-B-06-902, March 2006).

United States Environmental Protection Agency (EPA). 2006b. Final Revisions to the National Ambient Air Quality Standards for Particulate Pollution (Particulate Matter). EPA Web site: www.epa.gov/oar/particulatepollution/naaqsrev2006.html, accessed on March 19, 2007.

VRPA Technologies, Inc., Mid County Parkway Traffic Technical Report, April 2011.

APPENDIX PM-A

$PM_{2.5}$ AND PM_{10} MODELING RESULTS

VMT AND VHT CLASSIFIED BY SPEED BINS in Riverside County

Year 2008 (Existing RivTAM Model)									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	7,468	3,684	8,032	2,719	23,994	9,603	0	0
10	5.0 - 9.99	20,001	2,428	15,446	1,954	141,312	16,916	1,204	117
15	10.0 - 14.99	55,845	4,410	37,482	2,874	260,062	20,208	3,901	257
20	15.0 - 19.99	199,343	10,792	73,353	3,866	529,468	28,609	14,797	728
25	20.0 - 24.99	850,143	35,257	978,277	39,221	1,848,790	77,331	348,670	13,631
30	25.0 - 29.99	1,424,421	51,558	1,649,591	58,852	2,942,101	105,804	481,464	17,133
35	30.0 - 34.99	1,698,818	51,293	2,248,738	67,152	3,172,790	95,585	916,888	26,076
40	35.0 - 39.99	1,524,418	39,973	2,226,737	57,925	2,306,374	60,145	951,231	24,412
45	40.0 - 44.99	1,044,857	23,916	1,029,101	23,215	1,903,544	43,202	961,994	21,799
50	45.0 - 49.99	867,664	17,392	1,014,210	19,857	1,384,632	27,763	521,628	10,005
55	50.0 - 54.99	700,299	12,622	2,129,532	37,481	2,337,501	41,209	582,292	9,620
60	55.0 - 59.99	1,396,782	21,989	3,409,492	53,333	885,417	14,198	645,978	9,603
65	60.0 - 64.99	306,690	4,427	1,270,025	18,366	335,492	4,879	2,900,065	38,585
70	65.0 - 69.99	642,971	7,709	1,639,098	19,306	944,655	11,668	2,772,644	30,471
75	70.0 - 74.99	0	0	0	0	0	0	0	0
80	75.0 - 80.00	0	0	0	0	0	0	0	0
	TOTAL	**10,739,720**	**287,451**	**17,729,114**	**406,122**	**19,016,132**	**557,120**	**11,102,756**	**202,437**

	Daily vmt	VHT	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
5	39,494	16,006	5687.136	355.446	513.422	16051.373	5213.208	78.988	236.964	7323.43877
10	177,963	21,414	17262.41	1601.667	2313.519	72328.719	16016.67	355.926	1067.778	32999.97807
15	357,290	27,749	23938.43	3215.61	4644.77	145211.8	22151.98	714.58	2143.74	66252.88495
20	816,961	43,995	39214.13	7352.649	10620.49	332033.86	36763.25	1633.922	4901.766	151490.4507
25	4,025,880	165,441	157009.3	36232.92	52336.44	1636220.7	144931.7	8051.76	24155.28	746525.6919
30	6,497,577	233,347	214420	58478.19	84468.5	2640781.6	194927.3	12995.15	38985.46	1204856.619
35	8,037,234	240,105	225042.6	72335.11	104484	3266537.7	208968.1	16074.47	48223.4	1490357.803
40	7,008,760	182,456	182227.8	63078.84	91113.88	2848539.5	168210.2	14017.52	42052.56	1299646.142
45	4,939,496	112,133	123487.4	44455.46	64213.45	2007537.6	113608.4	9878.992	29636.98	915939.0416
50	3,788,134	75,017	94703.35	34093.21	49245.74	1539594.6	87127.08	7576.268	22728.8	702440.0517
55	5,749,624	100,932	155239.8	51746.62	74745.11	2336794.4	143740.6	11499.25	34497.74	1066162.438
60	6,337,669	99,122	190130.1	57039.02	82389.7	2575790.9	177454.7	12675.34	38026.01	1175204.61
65	4,812,272	66,257	168429.5	43310.45	62559.54	1955830.5	153992.7	9624.544	28873.63	892347.6816
70	5,999,368	69,155	233975.4	53994.31	77991.78	2438296.7	215977.2	11998.74	35996.21	1112472.887
			4038.22	1163.07	1679.99	52522.389	3725.7	258.46	775.3801	23963.33977

ITERIS

VMT AND VHT CLASSIFIED BY SPEED BINS in Riverside County

Year 2020 Alt 4(Y20A4D3)									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	182,495	66,258	47,713	43,430	117,632	206,133	0	0
10	5.0 - 9.99	167,642	21,871	53,023	7,091	250,421	30,874	2,379	300
15	10.0 - 14.99	159,804	12,463	75,847	5,842	581,193	48,933	36,979	2,914
20	15.0 - 19.99	247,408	13,518	98,218	5,260	969,075	53,812	19,983	1,016
25	20.0 - 24.99	1,148,629	47,477	1,322,301	52,987	2,810,015	117,716	490,562	18,924
30	25.0 - 29.99	2,154,735	77,481	2,302,515	82,752	4,944,591	177,998	608,026	21,858
35	30.0 - 34.99	2,485,292	75,679	3,776,059	112,847	4,789,403	144,323	1,021,098	29,780
40	35.0 - 39.99	2,012,507	52,566	3,196,484	82,867	3,378,743	87,455	1,276,499	32,485
45	40.0 - 44.99	1,481,004	33,788	2,309,237	51,610	2,746,846	62,016	1,395,824	30,677
50	45.0 - 49.99	1,649,906	33,001	1,960,621	38,520	2,784,208	55,571	643,698	12,696
55	50.0 - 54.99	1,337,603	24,002	3,465,978	60,261	2,146,635	38,131	648,750	11,377
60	55.0 - 59.99	1,668,476	26,967	5,388,459	84,913	1,575,973	25,063	2,036,320	29,737
65	60.0 - 64.99	1,295,496	18,349	1,509,808	22,020	901,268	12,201	4,509,398	61,354
70	65.0 - 69.99	282,471	2,940	1,557,034	17,573	394,995	4,523	3,913,292	43,089
75	70.0 - 74.99	0		0		0		0	
80	75.0 - 80.00	0		0		0		0	
	TOTAL	**16,273,468**	**506,358**	**27,063,297**	**667,975**	**28,390,998**	**1,064,752**	**16,602,808**	**296,206**

Year 2020 Alt 5(Y20A5D3)									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	183,561	66,801	48,646	44,144	119,208	212,789	0	0
10	5.0 - 9.99	144,420	19,644	48,612	6,713	256,294	31,659	2,379	300
15	10.0 - 14.99	183,201	14,721	78,197	6,060	587,002	48,888	36,979	2,914
20	15.0 - 19.99	248,198	13,527	100,071	5,355	941,194	52,224	19,989	1,016
25	20.0 - 24.99	1,148,820	47,473	1,319,026	52,867	2,864,991	120,078	490,522	18,922
30	25.0 - 29.99	2,176,683	78,280	2,302,021	82,783	4,867,710	175,346	608,102	21,859
35	30.0 - 34.99	2,492,521	75,866	3,767,054	112,683	4,857,671	146,313	1,019,748	29,745
40	35.0 - 39.99	2,003,855	52,261	3,194,819	82,885	3,267,554	84,673	1,276,829	32,493
45	40.0 - 44.99	1,565,208	35,634	2,335,552	52,190	2,897,164	65,429	1,402,231	30,815
50	45.0 - 49.99	1,577,343	31,338	1,977,815	38,903	2,742,249	54,652	638,602	12,591
55	50.0 - 54.99	1,336,604	23,935	3,432,806	59,588	2,117,127	37,549	648,843	11,379
60	55.0 - 59.99	1,637,883	26,441	5,430,111	85,616	1,565,311	24,870	2,039,366	29,785
65	60.0 - 64.99	1,291,881	18,295	1,466,635	21,312	899,948	12,180	4,504,425	61,283
70	65.0 - 69.99	282,570	2,940	1,556,999	17,573	395,220	4,527	3,913,284	43,089
75	70.0 - 74.99	0		0		0		0	
80	75.0 - 80.00	0		0		0		0	
	TOTAL	**16,272,748**	**507,156**	**27,058,364**	**668,671**	**28,378,643**	**1,071,176**	**16,601,299**	**296,191**

Year 2020 Alt 9(Y20A9D1)									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	181,932	65,622	48,622	43,406	123,671	217,626	0	0
10	5.0 - 9.99	170,650	22,268	48,331	6,610	251,898	30,983	2,380	300
15	10.0 - 14.99	160,238	12,462	81,631	6,291	591,378	48,941	36,984	2,915
20	15.0 - 19.99	232,378	12,707	99,723	5,352	974,675	53,718	19,994	1,017
25	20.0 - 24.99	1,170,902	48,462	1,330,377	53,333	2,870,909	119,955	490,499	18,921
30	25.0 - 29.99	2,206,190	79,236	2,303,805	82,795	4,881,432	175,760	610,156	21,926
35	30.0 - 34.99	2,474,298	75,378	3,779,675	112,870	4,806,099	144,883	1,019,114	29,726
40	35.0 - 39.99	1,976,567	51,655	3,176,481	82,357	3,307,067	85,654	1,280,359	32,582
45	40.0 - 44.99	1,607,735	36,578	2,321,262	51,895	2,898,856	65,485	1,378,458	30,321
50	45.0 - 49.99	1,573,557	31,214	2,054,698	40,413	2,745,870	54,748	661,468	13,066
55	50.0 - 54.99	1,308,237	23,462	3,376,912	58,648	2,071,373	36,709	649,846	11,391
60	55.0 - 59.99	1,614,980	26,065	5,390,940	84,965	1,535,047	24,381	2,027,657	29,609
65	60.0 - 64.99	1,309,995	18,579	1,491,860	21,741	933,772	12,716	4,512,736	61,404
70	65.0 - 69.99	282,374	2,938	1,557,732	17,580	395,590	4,532	3,913,649	43,094
75	70.0 - 74.99	0		0		0		0	
80	75.0 - 80.00	0		0		0		0	
	TOTAL	**16,270,033**	**506,627**	**27,062,049**	**668,254**	**28,387,637**	**1,076,091**	**16,603,300**	**296,273**

Year 2020 No Build									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	184,591	66,388	47,962	44,352	115,750	205,981	0	0
10	5.0 - 9.99	170,576	22,004	48,590	6,718	315,132	37,900	2,380	300
15	10.0 - 14.99	165,341	12,741	77,986	6,101	542,838	44,800	37,011	2,919
20	15.0 - 19.99	216,068	11,967	103,752	5,569	973,910	53,000	19,851	1,003
25	20.0 - 24.99	1,156,218	47,771	1,353,069	54,221	2,722,281	113,950	491,042	18,942
30	25.0 - 29.99	2,196,339	79,042	2,295,186	82,499	5,040,496	181,511	610,355	21,930
35	30.0 - 34.99	2,589,818	78,649	3,803,378	113,686	4,993,851	150,618	1,021,545	29,787
40	35.0 - 39.99	1,952,123	51,084	3,236,498	83,897	3,405,495	88,021	1,299,427	33,045
45	40.0 - 44.99	1,617,636	36,934	2,275,465	50,972	2,939,561	65,991	1,406,642	30,943
50	45.0 - 49.99	1,666,384	33,214	2,127,477	41,661	2,697,193	53,606	679,248	13,336
55	50.0 - 54.99	1,244,894	22,385	3,545,212	61,702	2,035,654	36,075	659,599	11,567
60	55.0 - 59.99	1,616,369	26,106	5,316,983	83,691	1,291,626	20,371	2,142,507	31,285
65	60.0 - 64.99	1,183,781	16,610	1,241,604	17,930	863,290	11,607	4,293,306	58,414
70	65.0 - 69.99	282,205	2,936	1,557,988	17,582	395,061	4,525	3,914,114	43,099
75	70.0 - 74.99	0		0		0		0	
80	75.0 - 80.00	0		0		0		0	
	TOTAL	**16,242,343**	**507,830**	**27,031,150**	**670,583**	**28,332,138**	**1,067,955**	**16,577,027**	**296,569**

ITERIS

Year 2020 Alt 4(Y20A4D3)										
	Daily		PM10	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	PM2.5
	vmt	VHT	Exhaust	Tire	Brake	Road Dust	Exhaust	Tire	Brake	Road Dust
5	347,840	315,821	36175.36	3130.56	4521.92	141371.1	33392.64	695.68	2087.04	64500.56
10	473,465	60,136	32669.09	4261.185	6155.045	192428.3	30301.76	946.93	2840.79	87795.41
15	853,823	70,153	41837.33	7684.407	11099.7	347015.5	38422.04	1707.646	5122.938	158325.8
20	1,334,684	73,606	48048.62	12012.16	17350.89	542449.7	44044.57	2669.368	8008.104	247492.7
25	5,771,507	237,105	161602.2	51943.56	75029.59	2345688	150059.2	11543.01	34629.04	1070220
30	10,009,867	360,090	230226.9	90088.8	130128.3	4068266	220217.1	20019.73	60059.2	1856146
35	12,071,852	362,629	241437	108646.7	156934.1	4906310	229365.2	24143.7	72431.11	2238504
40	9,864,233	255,374	187420.4	88778.1	128235	4009077	167692	19728.47	59185.4	1829141
45	7,932,911	178,091	142792.4	71396.2	103127.8	3224138	134859.5	15865.82	47597.47	1471013
50	7,038,433	139,788	126691.8	63345.9	91499.63	2860599	119653.4	14076.87	42230.6	1305148
55	7,598,966	133,771	151979.3	68390.69	98786.56	3088414	136781.4	15197.93	45593.8	1409089
60	10,669,228	166,680	234723	96023.05	138700	4336247	213384.6	21338.46	64015.37	1978413
65	8,215,970	113,923	205399.3	73943.73	106807.6	3339181	188967.3	16431.94	49295.82	1523501
70	6,147,792	68,125	159842.6	55330.13	79921.3	2498620	147547	12295.58	36886.75	1139995
			4411.035	1752.591	2531.52	79144.19	4088.817	389.4646	1168.394	36109.54

ITERIS

Year 2020 Alt 5(Y20A5D3)

	Daily vmt	Daily VHT	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
5	351,415	323,734	36547.16	3162.735	4568.395	142824.1	33735.84	702.83	2108.49	65163.47
10	451,705	58,316	31167.65	4065.345	5872.165	183584.5	28909.12	903.41	2710.23	83760.42
15	885,379	72,583	43383.57	7968.411	11509.93	359840.7	39842.06	1770.758	5312.274	164177.3
20	1,309,452	72,122	47140.27	11785.07	17022.88	532194.8	43211.92	2618.904	7856.712	242813.9
25	5,823,359	239,341	163054.1	52410.23	75703.67	2366762	151407.3	11646.72	34940.15	1079835
30	9,954,516	358,268	228953.9	89590.64	129408.7	4045770	218999.4	19909.03	59727.1	1845883
35	12,136,994	364,607	242739.9	109232.9	157780.9	4932785	230602.9	24273.99	72821.96	2250583
40	9,743,057	252,313	185118.1	87687.51	126659.7	3959828	165632	19486.11	58458.34	1806671
45	8,200,155	184,067	147602.8	73801.4	106602	3332753	139402.6	16400.31	49200.93	1520569
50	6,936,009	137,483	124848.2	62424.08	90168.12	2818972	117912.2	13872.02	41616.05	1286156
55	7,535,380	132,450	150707.6	67818.42	97959.94	3062571	135636.8	15070.76	45212.28	1397298
60	10,672,671	166,711	234798.8	96054.04	138744.7	4337647	213453.4	21345.34	64036.03	1979051
65	8,162,889	113,070	204072.2	73466	106117.6	3317607	187746.4	16325.78	48977.33	1513658
70	6,148,073	68,129	159849.9	55332.66	79924.95	2498734	147553.8	12296.15	36888.44	1140048
			4409.136	1752.203	2530.961	79126.7	4087.402	389.3785	1168.136	36101.56

ITERIS

Year 2020 Alt 9(Y20A9D1)

	Daily		PM10	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	PM2.5
	vmt	VHT	Exhaust	Tire	Brake	Road Dust	Exhaust	Tire	Brake	Road Dust
5	354,225	326,654	36839.4	3188.025	4604.925	143966.1	34005.6	708.45	2125.35	65684.54
10	473,259	60,161	32654.87	4259.331	6152.367	192344.6	30288.58	946.518	2839.554	87757.21
15	870,231	70,609	42641.32	7832.079	11313	353684.2	39160.4	1740.462	5221.386	161368.4
20	1,326,770	72,793	47763.72	11940.93	17248.01	539233.3	43783.41	2653.54	7960.62	246025.2
25	5,862,687	240,671	164155.2	52764.18	76214.93	2382746	152429.9	11725.37	35176.12	1087128
30	10,001,583	359,718	230036.4	90014.25	130020.6	4064899	220034.8	20003.17	60009.5	1854610
35	12,079,186	362,857	241583.7	108712.7	157029.4	4909290	229504.5	24158.37	72475.12	2239864
40	9,740,474	252,249	185069	87664.27	126626.2	3958778	165588.1	19480.95	58442.84	1806192
45	8,206,311	184,279	147713.6	73856.8	106682	3335255	139507.3	16412.62	49237.87	1521710
50	7,035,593	139,440	126640.7	63320.34	91462.71	2859445	119605.1	14071.19	42213.56	1304622
55	7,406,368	130,210	148127.4	66657.31	96282.78	3010138	133314.6	14812.74	44438.21	1373375
60	10,568,624	165,020	232509.7	95117.62	137392.1	4295359	211372.5	21137.25	63411.74	1959758
65	8,248,363	114,440	206209.1	74235.27	107228.7	3352346	189712.3	16496.73	49490.18	1529508
70	6,149,345	68,144	159883	55344.11	79941.49	2499251	147584.3	12298.69	36896.07	1140283
			4413.199	1752.441	2531.303	79137.43	4091.471	389.4313	1168.294	36106.45

ITERIS

Year 2020 No Build

	Daily vmt	Daily VHT	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
5	348,303	316,721	36223.51	3134.727	4527.939	141559.3	33437.09	696.606	2089.818	64586.41
10	536,678	66,922	37030.78	4830.102	6976.814	218119.7	34347.39	1073.356	3220.068	99517.1
15	823,176	66,562	40335.62	7408.584	10701.29	334559.8	37042.92	1646.352	4939.056	152642.9
20	1,313,581	71,539	47288.92	11822.23	17076.55	533872.9	43348.17	2627.162	7881.486	243579.5
25	5,722,610	234,884	160233.1	51503.49	74393.93	2325815	148787.9	11445.22	34335.66	1061153
30	10,142,376	364,981	233274.6	91281.38	131850.9	4122121	223132.3	20284.75	60854.26	1880718
35	12,408,592	372,740	248171.8	111677.3	161311.7	5043169	235763.2	24817.18	74451.55	2300946
40	9,893,543	256,047	187977.3	89041.89	128616.1	4020989	168190.2	19787.09	59361.26	1834576
45	8,239,304	184,840	148307.5	74153.74	107111	3348664	140068.2	16478.61	49435.82	1527828
50	7,170,302	141,817	129065.4	64532.72	93213.93	2914194	121895.1	14340.6	43021.81	1329601
55	7,485,359	131,729	149707.2	67368.23	97309.67	3042242	134736.5	14970.72	44912.15	1388023
60	10,367,485	161,452	228084.7	93307.37	134777.3	4213611	207349.7	20734.97	62204.91	1922460
65	7,581,981	104,561	189549.5	68237.83	98565.75	3081511	174385.6	15163.96	45491.89	1405939
70	6,149,368	68,141	159883.6	55344.31	79941.78	2499261	147584.8	12298.74	36896.21	1140288
			4398.443	1749.656	2527.281	79011.66	4078.635	388.8124	1166.437	36049.07

VMT AND VHT CLASSIFIED BY SPEED BINS in Riverside County

Year 2040 Alt 4									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	74,491	71,438	174,735	89,475	253,707	312,602	0	0
10	5.0 - 9.99	66,895	8,301	65,425	8,002	294,108	36,193	0	0
15	10.0 - 14.99	184,372	13,852	111,407	8,917	525,392	39,590	19,375	1,195
20	15.0 - 19.99	245,606	13,168	202,236	10,703	849,549	46,953	115,068	5,177
25	20.0 - 24.99	1,133,056	46,750	1,350,743	54,295	2,901,626	120,977	496,480	19,361
30	25.0 - 29.99	1,950,955	69,502	2,289,324	81,228	5,342,945	188,294	840,114	29,157
35	30.0 - 34.99	2,778,017	83,033	2,660,627	78,561	6,391,382	190,708	507,506	14,463
40	35.0 - 39.99	4,122,938	106,599	4,995,195	128,091	7,155,858	184,249	1,256,576	31,325
45	40.0 - 44.99	3,972,329	90,190	5,512,425	123,986	6,095,898	137,605	1,538,670	33,871
50	45.0 - 49.99	2,943,507	59,620	5,728,386	112,375	4,755,511	95,762	2,559,427	50,422
55	50.0 - 54.99	2,260,705	40,669	4,757,281	82,644	3,016,160	54,602	1,249,485	22,014
60	55.0 - 59.99	2,235,639	36,157	6,847,741	107,675	1,377,160	21,960	3,896,910	56,394
65	60.0 - 64.99	883,869	12,136	2,646,201	34,000	1,302,804	16,705	6,776,794	90,199
70	65.0 - 69.99	402,279	4,229	550,145	6,232	176,448	2,041	4,123,607	44,001
75	70.0 - 74.99	0		0		0		0	
80	75.0 - 80.00	0		0		0		0	
	TOTAL	**23,254,656**	**655,643**	**37,891,871**	**926,184**	**40,438,548**	**1,448,243**	**23,380,012**	**397,582**

Year 2040 Alt 5									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	72,054	62,401	168,431	87,210	253,366	315,923	0	0
10	5.0 - 9.99	72,177	8,764	70,796	8,878	316,709	38,472	0	0
15	10.0 - 14.99	175,509	13,138	120,427	9,516	507,745	37,603	19,377	1,196
20	15.0 - 19.99	243,870	13,079	189,577	10,030	844,773	46,412	115,074	5,177
25	20.0 - 24.99	1,150,871	47,640	1,358,583	54,597	2,918,900	121,364	496,467	19,361
30	25.0 - 29.99	1,930,899	69,050	2,283,415	81,024	5,205,893	183,763	839,564	29,140
35	30.0 - 34.99	2,847,622	85,089	2,672,880	78,839	6,563,759	195,972	507,291	14,459
40	35.0 - 39.99	4,101,117	105,792	4,954,953	127,193	7,113,101	182,977	1,254,567	31,279
45	40.0 - 44.99	3,969,363	90,201	5,576,903	125,415	6,191,903	139,780	1,537,935	33,855
50	45.0 - 49.99	2,898,721	58,715	5,763,672	112,862	4,778,112	96,145	2,562,432	50,485
55	50.0 - 54.99	2,257,736	40,667	4,644,748	80,737	2,893,322	52,253	1,259,726	22,147
60	55.0 - 59.99	2,294,525	37,105	6,883,291	108,263	1,371,349	21,872	3,868,574	56,011
65	60.0 - 64.99	835,919	11,367	2,648,459	34,028	1,291,423	16,541	6,793,085	90,408
70	65.0 - 69.99	401,991	4,226	550,825	6,242	189,712	2,226	4,123,881	44,005
75	70.0 - 74.99	0		0		0		0	
80	75.0 - 80.00	0		0		0		0	
	TOTAL	**23,252,373**	**647,233**	**37,886,960**	**924,834**	**40,440,066**	**1,451,302**	**23,377,973**	**397,522**

Year 2040 Alt 9									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	73,746	66,186	168,614	87,651	248,213	293,537	0	0
10	5.0 - 9.99	71,068	8,582	77,133	9,467	319,994	38,798	0	0
15	10.0 - 14.99	168,980	12,699	117,428	9,201	522,542	38,509	15,935	1,002
20	15.0 - 19.99	240,654	12,950	201,969	10,625	826,621	45,476	118,444	5,363
25	20.0 - 24.99	1,188,711	49,009	1,345,913	54,010	2,956,208	123,184	497,923	19,417
30	25.0 - 29.99	1,944,856	69,363	2,280,599	80,967	5,351,458	188,704	842,230	29,237
35	30.0 - 34.99	2,831,278	84,503	2,697,867	79,581	6,510,786	193,906	506,238	14,426
40	35.0 - 39.99	4,096,473	105,778	4,939,151	126,756	7,087,561	182,289	1,255,805	31,307
45	40.0 - 44.99	4,055,690	92,054	5,711,195	128,297	6,217,547	140,328	1,534,081	33,783
50	45.0 - 49.99	2,825,854	57,160	5,617,010	110,012	4,779,800	96,028	2,572,724	50,693
55	50.0 - 54.99	2,229,038	40,174	4,754,599	82,606	2,768,984	50,032	1,314,871	23,027
60	55.0 - 59.99	2,255,271	36,474	6,848,010	107,733	1,408,762	22,510	3,813,068	55,147
65	60.0 - 64.99	880,626	12,091	2,600,725	33,225	1,300,217	16,661	6,796,335	90,473
70	65.0 - 69.99	402,305	4,229	550,678	6,240	179,942	2,092	4,124,322	44,011
75	70.0 - 74.99	0		0	0	0	0	0	0
80	75.0 - 80.00	0		0	0	0	0	0	0
	TOTAL	**23,264,548**	**651,251**	**37,910,890**	**926,371**	**40,478,635**	**1,432,054**	**23,391,974**	**397,886**

Year 2040 No Build									
	VMT	AM		MD		PM		NT	
Bin Name	Speed Bins	VMT	VHT	VMT	VHT	VMT	VHT	VMT	VHT
5	0.0 - 4.99	73,443	65,465	170,408	88,346	246,123	299,970	0	0
10	5.0 - 9.99	66,136	8,099	73,510	9,067	299,069	37,581	0	0
15	10.0 - 14.99	183,780	13,782	117,044	9,173	553,131	41,716	13,003	842
20	15.0 - 19.99	219,459	11,896	193,111	10,209	841,331	45,782	53,085	2,501
25	20.0 - 24.99	1,199,961	49,591	1,363,339	54,691	2,961,170	123,187	568,624	21,904
30	25.0 - 29.99	1,951,268	69,384	2,272,139	80,625	5,302,008	186,798	870,527	30,122
35	30.0 - 34.99	2,826,358	84,471	2,671,624	78,763	6,479,783	193,331	462,440	13,250
40	35.0 - 39.99	4,164,146	107,555	5,071,146	129,932	7,439,530	190,997	1,254,859	31,278
45	40.0 - 44.99	4,068,884	92,477	5,749,550	128,970	6,027,480	135,997	1,592,765	35,021
50	45.0 - 49.99	2,894,256	58,607	5,625,986	110,409	4,780,612	96,033	2,566,522	50,672
55	50.0 - 54.99	2,160,153	38,922	4,782,259	83,284	2,791,403	50,483	1,429,919	25,054
60	55.0 - 59.99	2,181,842	35,202	6,820,579	107,096	1,116,300	17,564	3,886,362	56,233
65	60.0 - 64.99	772,902	10,377	2,334,475	29,152	1,275,151	16,279	6,527,502	86,544
70	65.0 - 69.99	402,685	4,233	550,536	6,238	186,111	2,174	4,117,214	43,901
75	70.0 - 74.99	0	0	0	0	0	0	0	0
80	75.0 - 80.00	0	0	0	0	0	0	0	0
	TOTAL	**23,165,272**	**650,062**	**37,795,705**	**925,956**	**40,299,201**	**1,437,893**	**23,342,822**	**397,322**

	Year 2040 Alt 4									
	Daily vmt	VHT	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
5	502,933	473,516	48784.52	4526.399	6538.132	204404.93	45263.99	1005.866	3017.599	93259.7482
10	426,428	52,496	27717.83	3837.854	5543.567	173311.34	25585.69	852.8564	2558.569	79073.29753
15	840,546	63,555	37824.58	7564.917	10927.1	341619.53	35302.94	1681.093	5043.278	155863.9125
20	1,412,458	76,001	48023.58	12712.12	18361.96	574059.21	43786.21	2824.917	8474.75	261914.5155
25	5,881,905	241,383	152929.5	52937.14	76464.76	2390556.6	141165.7	11763.81	35291.43	1090691.452
30	10,423,338	368,182	229313.4	93810.04	135503.4	4236311.5	208466.8	20846.68	62540.03	1932817.114
35	12,337,532	366,764	234413.1	111037.8	160387.9	5014288.8	209738	24675.06	74025.19	2287769.249
40	17,530,566	450,265	298019.6	157775.1	227897.4	7124870.7	280489.1	35061.13	105183.4	3250722.268
45	17,119,321	385,652	291028.5	154073.9	222551.2	6957730.3	256789.8	34238.64	102715.9	3174464.435
50	15,986,831	318,179	271776.1	143881.5	207828.8	6497457.5	255789.3	31973.66	95920.99	2964464.986
55	11,283,631	199,930	203105.4	101552.7	146687.2	4585956.3	191821.7	22567.26	67701.78	2092342.579
60	14,357,450	222,186	287149	129217	186646.8	5835235.1	258434.1	28714.9	86144.7	2662326.018
65	11,609,667	153,040	267022.3	104487	150925.7	4718466	243803	23219.33	69658	2152800.112
70	5,252,479	56,503	126059.5	47272.31	68282.23	2134742	115554.5	10504.96	31514.87	973976.0237
			5562.537	2479.466	3581.451	111968.72	5096.982	550.9924	1652.977	51085.72687

Year 2040 Alt 5										
	Daily		PM10	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	PM2.5
	vmt	VHT	Exhaust	Tire	Brake	Road Dust	Exhaust	Tire	Brake	Road Dust
5	493,852	465,534	47903.61	4444.664	6420.071	200713.93	44446.64	987.7032	2963.11	91575.73186
10	459,681	56,114	29879.28	4137.131	5975.856	186826.21	27580.87	919.3624	2758.087	85239.45718
15	823,057	61,453	37037.58	7407.517	10699.75	334511.6	34568.41	1646.115	4938.344	152620.9164
20	1,393,294	74,698	47372	12539.65	18112.82	566270.39	43192.12	2786.588	8359.765	258360.8657
25	5,924,820	242,962	154045.3	53323.38	77022.66	2407998.5	142195.7	11849.64	35548.92	1098649.326
30	10,259,772	362,977	225715	92337.94	133377	4169833.8	205195.4	20519.54	61558.63	1902486.666
35	12,591,553	374,358	239239.5	113324	163690.2	5117529.3	214056.4	25183.11	75549.32	2334872.752
40	17,423,737	447,240	296203.5	156813.6	226508.6	7081452.8	278779.8	34847.47	104542.4	3230912.842
45	17,276,105	389,251	293693.8	155484.9	224589.4	7021451.3	259141.6	34552.21	103656.6	3203537.174
50	16,002,938	318,206	272049.9	144026.4	208038.2	6504003.5	256047	32005.88	96017.63	2967451.586
55	11,055,531	195,804	198999.6	99499.78	143721.9	4493250.9	187944	22111.06	66333.19	2050045.742
60	14,417,739	223,250	288354.8	129759.6	187430.6	5859738	259519.3	28835.48	86506.43	2673505.472
65	11,568,886	152,344	266084.4	104120	150395.5	4701891.4	242946.6	23137.77	69413.32	2145237.948
70	5,266,408	56,699	126393.8	47397.68	68463.31	2140403.2	115861	10532.82	31598.45	976558.9572
			5562.108	2479.313	3581.23	111961.81	5095.844	550.9584	1652.875	51082.57371

Year 2040 Alt 9										
	Daily		PM10	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	PM2.5
	vmt	VHT	Exhaust	Tire	Brake	Road Dust	Exhaust	Tire	Brake	Road Dust
5	490,573	447,374	47585.53	4415.153	6377.443	199381.22	44151.53	981.145	2943.435	90967.68284
10	468,195	56,846	30432.69	4213.757	6086.538	190286.52	28091.71	936.3904	2809.171	86818.2225
15	824,885	61,411	37119.8	7423.961	10723.5	335254.18	34645.15	1649.769	4949.307	152959.7186
20	1,387,687	74,414	47181.37	12489.19	18039.94	563991.68	43018.31	2775.375	8326.124	257321.2059
25	5,988,754	245,620	155707.6	53898.79	77853.8	2433983	143730.1	11977.51	35932.53	1110504.752
30	10,419,144	368,271	229221.2	93772.3	135448.9	4234606.8	208382.9	20838.29	62514.86	1932039.358
35	12,546,168	372,416	238377.2	112915.5	163100.2	5099083.7	213284.9	25092.34	75277.01	2326456.954
40	17,378,989	446,130	295442.8	156410.9	225926.9	7063266.1	278063.8	34757.98	104273.9	3222615.146
45	17,518,512	394,462	297814.7	157666.6	227740.7	7119971.8	262777.7	35037.02	105111.1	3248487.111
50	15,795,388	313,893	268521.6	142158.5	205340	6419650.2	252726.2	31590.78	94772.33	2928965.407
55	11,067,492	195,839	199214.8	99607.42	143877.4	4498111.9	188147.4	22134.98	66404.95	2052263.561
60	14,325,111	221,864	286502.2	128926	186226.4	5822091.8	257852	28650.22	85950.66	2656329.362
65	11,577,902	152,450	266291.7	104201.1	150512.7	4705555.6	243135.9	23155.8	69467.41	2146909.726
70	5,257,248	56,573	126173.9	47315.23	68344.22	2136680	115659.4	10514.5	31543.49	974860.2546
			5567.873	2481.072	3583.771	112041.26	5100.677	551.3494	1654.048	51118.82377

Year 2040 No Build										
	Daily		PM10	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	PM2.5
	vmt	VHT	Exhaust	Tire	Brake	Road Dust	Exhaust	Tire	Brake	Road Dust
5	489,973	453,780	47527.38	4409.757	6369.649	199137.57	44097.57	979.946	2939.838	90856.51654
10	438,715	54,747	28516.49	3948.437	5703.298	178305.09	26322.91	877.4304	2632.291	81351.69658
15	866,958	65,513	39013.13	7802.626	11270.46	352354.09	36412.25	1733.917	5201.75	160761.5526
20	1,306,985	70,388	44437.48	11762.86	16990.8	531192.08	40516.53	2613.97	7841.909	242356.3872
25	6,093,095	249,374	158420.5	54837.85	79210.23	2476389.7	146234.3	12186.19	36558.57	1129852.787
30	10,395,942	366,929	228710.7	93563.47	135147.2	4225176.8	207918.8	20791.88	62375.65	1927736.916
35	12,440,205	369,816	236363.9	111961.8	161722.7	5056017.7	211483.5	24880.41	74641.23	2306808.057
40	17,929,681	459,762	304804.6	161367.1	233085.9	7287081.4	286874.9	35859.36	107578.1	3324730.87
45	17,438,678	392,466	296457.5	156948.1	226702.8	7087525.3	261580.2	34877.36	104632.1	3233683.433
50	15,867,377	315,721	269745.4	142806.4	206275.9	6448908.1	253878	31734.75	95204.26	2942314.337
55	11,163,733	197,744	200947.2	100473.6	145128.5	4537226.8	189783.5	22327.47	66982.4	2070109.728
60	14,005,082	216,095	280101.6	126045.7	182066.1	5692024	252091.5	28010.16	84030.49	2596985.939
65	10,910,030	142,352	250930.7	98190.27	141830.4	4434115.4	229110.6	21820.06	65460.18	2023065.173
70	5,256,546	56,546	126157.1	47308.91	68335.1	2136394.8	115644	10513.09	31539.27	974730.1187
			5538.214	2472.282	3571.074	111644.29	5074.842	549.3959	1648.188	50937.70615

2008 EMFAC

Speed MPH	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
0	0.071	0	0	0.4064256	0.065	0	0	0.18543168
5	0.144	0.009	0.013	0.4064256	0.132	0.002	0.006	0.18543168
10	0.097	0.009	0.013	0.4064256	0.09	0.002	0.006	0.18543168
15	0.067	0.009	0.013	0.4064256	0.062	0.002	0.006	0.18543168
20	0.048	0.009	0.013	0.4064256	0.045	0.002	0.006	0.18543168
25	0.039	0.009	0.013	0.4064256	0.036	0.002	0.006	0.18543168
30	0.033	0.009	0.013	0.4064256	0.03	0.002	0.006	0.18543168
35	0.028	0.009	0.013	0.4064256	0.026	0.002	0.006	0.18543168
40	0.026	0.009	0.013	0.4064256	0.024	0.002	0.006	0.18543168
45	0.025	0.009	0.013	0.4064256	0.023	0.002	0.006	0.18543168
50	0.025	0.009	0.013	0.4064256	0.023	0.002	0.006	0.18543168
55	0.027	0.009	0.013	0.4064256	0.025	0.002	0.006	0.18543168
60	0.03	0.009	0.013	0.4064256	0.028	0.002	0.006	0.18543168
65	0.035	0.009	0.013	0.4064256	0.032	0.002	0.006	0.18543168
70	0.039	0.009	0.013	0.4064256	0.036	0.002	0.006	0.18543168

2020 EMFAC

Speed MPH	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
0	0.034	0	0	0.4064256	0.032	0	0	0.18543168
5	0.104	0.009	0.013	0.4064256	0.096	0.002	0.006	0.18543168
10	0.069	0.009	0.013	0.4064256	0.064	0.002	0.006	0.18543168
15	0.049	0.009	0.013	0.4064256	0.045	0.002	0.006	0.18543168
20	0.036	0.009	0.013	0.4064256	0.033	0.002	0.006	0.18543168
25	0.028	0.009	0.013	0.4064256	0.026	0.002	0.006	0.18543168
30	0.023	0.009	0.013	0.4064256	0.022	0.002	0.006	0.18543168
35	0.02	0.009	0.013	0.4064256	0.019	0.002	0.006	0.18543168
40	0.019	0.009	0.013	0.4064256	0.017	0.002	0.006	0.18543168
45	0.018	0.009	0.013	0.4064256	0.017	0.002	0.006	0.18543168
50	0.018	0.009	0.013	0.4064256	0.017	0.002	0.006	0.18543168
55	0.02	0.009	0.013	0.4064256	0.018	0.002	0.006	0.18543168
60	0.022	0.009	0.013	0.4064256	0.02	0.002	0.006	0.18543168
65	0.025	0.009	0.013	0.4064256	0.023	0.002	0.006	0.18543168
70	0.026	0.009	0.013	0.4064256	0.024	0.002	0.006	0.18543168

2040 EMFAC

Speed MPH	PM10 Exhaust	PM10 Tire	PM10 Brake	PM10 Road Dust	PM2.5 Exhaust	PM2.5 Tire	PM2.5 Brake	PM2.5 Road Dust
0	0.023	0	0	0.4064256	0.022	0	0	0.18543168
5	0.097	0.009	0.013	0.4064256	0.09	0.002	0.006	0.18543168
10	0.065	0.009	0.013	0.4064256	0.06	0.002	0.006	0.18543168
15	0.045	0.009	0.013	0.4064256	0.042	0.002	0.006	0.18543168
20	0.034	0.009	0.013	0.4064256	0.031	0.002	0.006	0.18543168
25	0.026	0.009	0.013	0.4064256	0.024	0.002	0.006	0.18543168
30	0.022	0.009	0.013	0.4064256	0.02	0.002	0.006	0.18543168
35	0.019	0.009	0.013	0.4064256	0.017	0.002	0.006	0.18543168
40	0.017	0.009	0.013	0.4064256	0.016	0.002	0.006	0.18543168
45	0.017	0.009	0.013	0.4064256	0.015	0.002	0.006	0.18543168
50	0.017	0.009	0.013	0.4064256	0.016	0.002	0.006	0.18543168
55	0.018	0.009	0.013	0.4064256	0.017	0.002	0.006	0.18543168
60	0.02	0.009	0.013	0.4064256	0.018	0.002	0.006	0.18543168
65	0.023	0.009	0.013	0.4064256	0.021	0.002	0.006	0.18543168
70	0.024	0.009	0.013	0.4064256	0.022	0.002	0.006	0.18543168

Emissions (lb/day)

	2008 Baseline	2020 No Build	2020 Alt 4	2020 Alt 5	2020 Alt 9	2040 No Build	2040 Alt 4	2040 Alt 5	2040 Alt 9
PM10 Exhaust	4,036	4,398	4,411	4,409	4,413	5,538	5,563	5,562	5,568
PM10 Tire Wear	1,162	1,750	1,753	1,752	1,752	2,472	2,479	2,479	2,481
PM10 Brake Wear	1,679	2,527	2,532	2,531	2,531	3,571	3,581	3,581	3,584
PM10 Road Dust	52,495	79,012	79,144	79,127	79,137	111,644	111,969	111,962	112,041
PM2.5 Exhaust	3,724	4,079	4,089	4,087	4,091	5,075	5,097	5,096	5,101
PM2.5 Tire Wear	258	389	389	389	389	549	551	551	551
PM2.5 Brake Wear	775	1,166	1,168	1,168	1,168	1,648	1,653	1,653	1,654
PM2.5 Road Dust	23,951	36,049	36,110	36,102	36,106	50,938	51,086	51,083	51,119
PM10 Total	59,372	87,687	87,839	87,819	87,834	123,226	123,592	123,584	123,674
PM2.5 Total	28,708	41,683	41,756	41,746	41,756	58,210	58,387	58,382	58,425
PM10 Change from Baseline		48%	48%	48%	48%	108%	108%	108%	108%
PM10 Change from No Build			0.17%	0.15%	0.17%		0.30%	0.29%	0.36%
PM2.5 Change from Baseline		45%	45%	45%	45%	103%	103%	103%	104%
PM2.5 Change from No Build			0.18%	0.15%	0.17%		0.30%	0.30%	0.37%